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Control unit of the heating system with a fireplace controlled by a choke valve

Aquaflam AFLLCD

User Manual

The RT-08G control unit controls the heating system based on the water jacket fireplace that is a heat source, in which combustion process is controlled by a choke valve. The heat receivers are: Warm Applicable Water accumulator **(WAW)** and Central Heating system **(CH**).

! The control unit is equipped with its own emergency power source - breaks in power supplying up to 8 secs do not interrupt its operation (over the time the emergency buffering power source is activated).

! The control unit can cooperate with the TATAREK A 200WAC emergency power supply system which ensures that all the devices connected to the RT08G control unit can operate without any disruption in case of power decline even up to 9 hrs.

1. Basic technical parameters

Power	**230 V/50 Hz**
Power consumption without load	**5 W**
Max connection power	**750 W**
Operation conditions	**0 – 50 °C, humidity 10 – 90% (no condensation)**
Housing protection class	**IP41**
Fuse	**6,3A/250 V**
Number of outputs to control pumps	**3× 250 W/230 V/50 Hz**
Number of nonvoltage outputs	**1 × max. 500 W**
Number of outputs to control the choke valve drive	**1 × 5 V/500 mA/DC**
Number of water temperature sensors	**3 × KTY81 (0… + 100 °C)**
Temp. measurement precision	**2 °C**
Temp. measurement resolution	**0,5 °C**
Number of the time zones	**4**

2. Principle of Operation

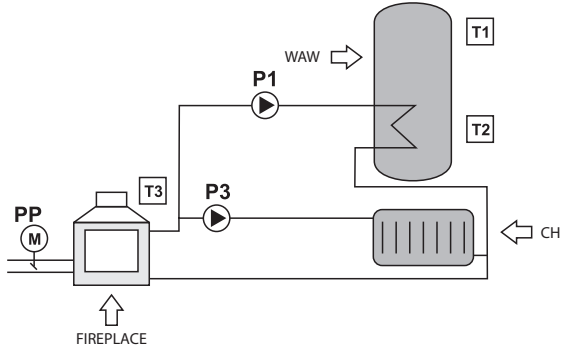
The main function of the control unit is to keep temperature in the water jacket at the preset value. The task is realized by measuring temperature **(T3)** and controlling the cold air choke valve **(PP)** properly. Fireplace operation temperature is defined by the **<20> "FIREPLACE Temp."** parameter (see PARAMETERS LEVEL 1). If the fireplace temperature **(T3)** is higher than the **<20> "FIREPLACE Temp."** parameter the choke valve is gradually shut off limiting air supply, and if the temperature **(T3)** is lower than the **<20> "FIREPLACE Temp."** parameter the choke valve is gradually opened up.

The second function is to control the **WAW** pump loading the warm applicable water accumulator (WAW). The **WAW (P1)** pump operates if the fireplace temperature both exceeds the **<31> "Switch-on Temp. of PUMPS"** value and is higher than the WAW accumulator temperature (T2) by the **<44> "Delta Temp. of WAW"** parameter (see PARAMETERS LEVEL 1).

The third function is to control the circulating pump **(P3)** of central heating system. The pump works if the fireplace temperature exceeds the **<31> "Switch-on Temp. of PUMPS"** value. It's possible to activate the **WAW** priority function **"PRIORITY"** - see the description of operation modes of the **WAW** accumulator - chapter 2.4 of the manual. The control unit is also equipped with the **"CLOCK"** function to control the **WAW** priority and the fireplace operation temperature in selected times of day.

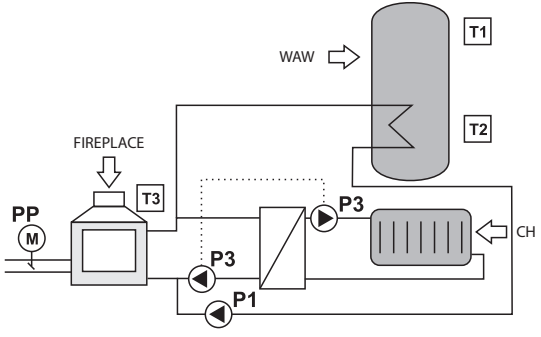
! The fireplace can also be equipped with warm air distribution system based on the RT-03C ARO control unit. The control unit measures temperature in the chamber of the fireplace air ventilator and controls its rotation speed in manual or automatic mode.

Basic operation configuration of the control unit



CH = Central Heating
WAW = Warm Applicable Water

Operation configuration of the control unit with the heat exchanger for the CH system
(pump of the heat exchanger and the **CH** system connected to the **P3** output)



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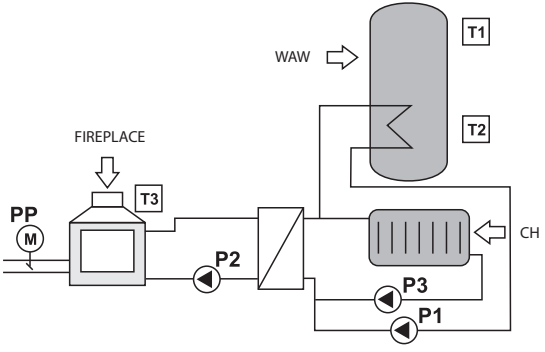
Operation configuration of the control unit with the heat exchanger for the CH and WAW systems



WAW	*Warm Applicable Water accumulator (boiler)*
FIREPLACE	*Water jacket fireplace*
CH	*Central heating system*
T1	*Upper temperature sensor of the* **WAW** *accumulator (option)*
T2	*Lower temperature sensor of the* **WAW** *accumulator*
T3	*Temperature sensor of the fireplace water jacket*
P1	*Pump loading* **WAW** *from fireplace*
P2	*Pump of the primary side of heat exchanger (it operates if* **P1** *and* **P3** *are activated)*
P3	*Circulating pump* **CH**
PP	*Electronically controlled choke valve of the fireplace*

2.1 Choke valve operation

The choke valve regulates an air supply to the combustion chamber, which allows the temperature of the fireplace water jacket to be kept at the preset value. The task is realized by comparing the temperature of the water jacket **(T3)** and preset temperature (the **<20>"FIREPLACE Temp."** parameter) and then by gradual opening/shutting the choke valve.

The shutdown of the regulator (caused e.g. by power decline) automatically causes thechoke valve to be set at the rest position defined by the **<50> ChokeV State OFF parameter** (Default setting is 0% - full shut-off).

2.2 CH pump operation

If the fireplace temperature exceeds the preset value of 45 °C (the **<31> Switch-on Temp. of PUMPS parameter)** the **CH pump (P3)** turns on. The fireplace inputs with the water jacket optimally operate at water temperature in the range of 45 °C - 85 °C. Most producers don't recommend using the water jacket fireplace below the so-called dew point. The operation in such conditions leads to emitting a lot of condensate on the surface of the furnace. The effect originates from too much cooling down combustion gas in the combustion chamber. As a result it has a negative impact on the cleanness of the fireplace windowpane, efficiency and life-time of the fireplace input.

During loading the warm applicable water accumulator **WAW**, the CH pump can operate cyclically if the **WAW** mode is set to **PRIORITY** (Limitation of the heat amount flowing into the **CH** system). The cyclical operation is based on turning on the pump for **45 secs** and then turning off for 4mins **(the <32> Stoptime of CH PUMP parameter).**

! ANTIFREEZE Function - The control unit protects the system from freezing, automatically turning on the circulating pump if the measured temperature is below 4 °C.

!ANTISTOP Function - The control unit realizes the after season rundown of the pump by switching it on for 1 min if it doesn't operate for a week.

2.3 WAW pump operation

The control unit controls as well the pump **(P1)** loading the warm applicable water accumulator **WAW**. The loading pump can be turned on if water temperature in the fireplace is higher than the preset threshold of 45 °C (the **<31> Switch-on Temp. of PUMPS parameter**) and higher than in the **WAW** accumulator by 5 °C (**the <44> Delta Temp. of WAW parameter**).

Dependent on the quantity of connected temperature sensors of the **WAW** accumulator or the buffer there are the following ways of the pump operation:

****** Sensors **T1** and **T2** not connected. Loading the WAW accumulator at random. The **WAW** loading pump turns on if water temperature in the fireplace jacket reaches the preset value or is higher than 50 °C **(the <42> Minimum temp. of WAW parameter**).

***** One of the sensors **T1** or **T2** connected. The **WAW** loading pump (P1) turns on if the temperature of the WAW accumulator is lower than 50 °C. (**the <42> Minimum temp.of WAW parameter**) and turns off if the temperature is higher than 60 °C (the <41> Maximum temp. of WAW parameter).

****** Both of the sensors T1(low) and T2(up) connected. The loading starts when the temperature sensor (T1) measures below 50 °C (the <42> Minimum temp.of WAW parameter) and ends when the temperature sensor (T2) measures above 60 °C (**the <41> Maximum temp. of WAW parameter**).
The <46> Loading mode of **WAW** parameter should have the value 2, which means the operation of both of the sensors. The value 1 causes the operation to be made like at the temperature sensor **T2** only active - sensor **T1** then doesn't take part in the control but its measurements are still shown !.
After the loading of the **WAW** accumulator ends the pump runs for 1min (the <45> Rundown Time of **WAW PUMP**), which prevents the temperature in the water jacket from rising, especially in summer time when the CH pump doesn't operate.

!ANTISTOP Function - The control unit realizes the after season rundown of the pump by switching it on for 1 min if it doesn't operate for a week.

2.4 WAW priority and the summer mode

OFF - The **WAW** loading pump turned off. Only the **CH** pump can run.

SUMMER - Turning off the heating system in summer time (the **CH** pump doesn't operate). Fireplace only works in the preparation function of the **WAW**. or loading function of the buffer only.

ON - Standard operation (parallel operation of pumps) without favouring the **WAW** circuit

PRIORITY - Faster reaching the readiness of the **WAW** accumulator by limiting heat obtain by the heating system. The **CH** pump works cyclically. Turning off the WAW pump after loading the accumulator causes the comeback of normal operation of the **CH** pump

CLOCK - beyond the time zones **$1...$3** the pump operates like in the ON mode and in the time zone like **PRIORITY**

SPECIAL - beyond the time zones **$1...$3** the pump operates like in the **ON** mode and in the time zone like **PRIORITY.** Additionally during loading the **WAW** accumulator the preset temperature of the water jacket is raised up to 65 °C.(the <43> Loading temp. of **WAW** special parameter)).

2.5 Nonvoltage "CONTROL" output

The control unit is equipped with the **CONTROL** relay whose contacts can be used e.g. to switch off another heat source when the fireplace works. The **<12> CONTROL** Relay parameter defines the function of the relay more precisely. (see **PARAMETERS LEVEL** 3)

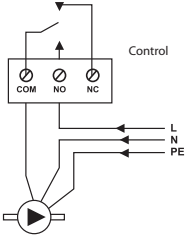
CONTROL relay turned off

CONTROL relay turned on

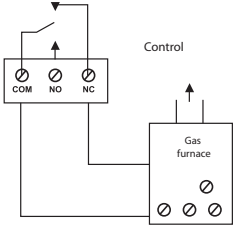
The nonvoltage relay described as **„CONTROL"** in the schematic diagram (Fig.3) enables connecting different kinds of devices controlling another device we want to switch on or switch off acc.to the settings **(PARAMETERS LEVEL 3)** of the **<12> CONTROL** Relay parameter.
The output, relay, is inactive (nonvoltage) and can be used for handling (turning on/off) devices making use of the normally closed or opened contacts (e.g. gas furnaces, ventilation).

At the normally opened connection you connect **COM** and **NO**
At the normally closed connection you connect **COM** and **NC**

Those contacts can be also used for handling any electric device like a pump or electrovalve of 500W max power. You have to remember it's a nonvoltage contact, that is, you need to separately power that connected device through the **CONTROL** contacts.



Connecting additional pump



Turning off the gas furnace

3. Service of the control unit

There are elements on the control panel (fig. 2). In the turn-off state only the orange stanby state **LED „1"** lights and the graphic display shows current temperature of the water jacket and current time. The turn-on of the control unit follows by pressing the button **„3"** F1 . In order to turn it off press once more the button**„3"** F1 and at the same time hold it down for about 1sec. In case of supply voltage decline the control unit comes back to the state before the decline.
The operation state is presented on the graphic display (2). The screens inform about the operation of devices, temperature of sensors; they make it possible to change the parameters etc..The change of screen is done by pressing the **CHOOSE** button **„7"** . If this is the screen that is

able to change a parameter, press the **CONFIRM** button **„6“** OK .which causes blinking of the parameter field to be changed. By pressing **“+” (4)** or **“-” (5**) one can alter its value. If there are more parameter fields on the screen (e.g. setting the clock) then one will go among them by pressing the **CHOOSE** button **„7“** ↻ . By clicking the **CONFIRM** button **„6“** OK one confirms the changes - the parameter field stops blinking. The changed parameter not confirmed for 10 secs is not accepted by the control unit and it recalls a previous value of the parameter.

ON/OFF

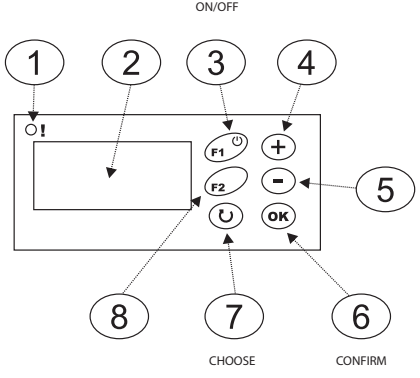


Fig. 2 Control panel view

1. Control unit status diode:
- alarm (red),
- standby (orange),
- operation (green),
- manual **MAN** (blinking green)

2. Graphic display
3. Button F1: switch-on/off power supply
4. Increase button
5. Decrease button
6. Confirmation button
7. Parameter selection button
8. Button F2 (for producer)

3.1 Time zones
! In the default settings the time zones are turned off. In order to activate them you need to set the **<14>** Time zones parameter to **ON**.

The control unit is equipped with the clock, which enables the automatic change of the control unit operation at different times of day. 24 hrs are divided into 5 time zones **($1, $2, $3, e4, e5)** and the single time when no zone is active that is **ZONE 0** or **BAZA (BASE)**. Each zone has a start time **FROM** and an end time **TO**. The same start and end time means the zone isn't active, which doesn't change the settings of the control unit. The time zones can overlap each other in that case binding are the settings for the active zone of higher number.

In the control unit there's a zones program. In order to activate it you need to set the **<14>** Time zones parameter to **ON**.

ZONE $1	FROM 6.00 TO 8.00
ZONE $2	FROM 14.00 TO 17.30
ZONE $3	FROM 20.00 TO 22.30
ZONE $4	FROM 23.00 TO 5.00
ZONE $5	FROM 8.00 TO 13.30

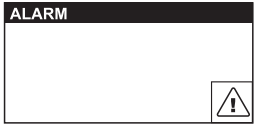
En

The zones **$1...$3** relates to the pump loading the **WAW** accumulator in the mode **CLOCK** and Special (see p.2.4)
The zones e4...e5 enable lowering the preset temperature of the fireplace by the **<22> ECO** Temp. parameter at the limited demand for the heat.

3.2 Screens

Alarm screens **"ALARM"** is not seen till the following emergency situation takes place:

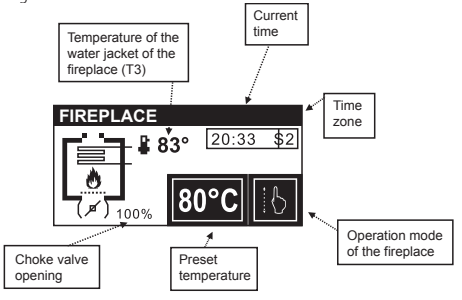
1. Damage of the **T1** sensor (upper one of the **WAW)**. The **WAW** temp. sensor **(T1)** damaged.text shows up. The alarm doesn't work if the sensor is not installed.
2. Damage of the **T2** sensor (lower one of the **WAW)**. The **WAW** temp. sensor **(T2)** damaged. text shows up.
3. Damage of the **T3** sensor of the fireplace. The Fplace temp. sensor **(T3)** damaged text shows up.
4. The exceeding of the limit temperature of the fireplace defined by the **<21> ALARM** Temp. parameter. The too high temp. of the fireplace text shows up.



Emergency situation is accompanied by a broken sound alarm that can be turned off by pressing the **CONFIRM** button **(6)** OK

! In the emergency of exceeding the temperature of the fireplace the **CH** pump turns on to cool off the fireplace.

Screen of the fireplace operation shows the current temperature of the fireplace and the level of choke valve opening.



It's a stable state, that is, in order to change it you need to press the **CHOOSE** button **„7"** During appearing this screen you can change the preset temperature of the fireplace (the <20> **FIREPLACE** Temp. parameter). After pressing the **CONFIRM** button **„6"** OK the preset temperature blinks whose value can be altered with the buttons **"+" „4"** + or **„5"** To confirm the changes you need to press the **CONFIRM** button**„6"** OK once more.

! At the economic time zones **"e4" or "e5"** the displayed temperature is corrected by the drop (the **<22> ECO** Temp. parameter) that is indicated by the **"-"** minus sign instead of C..

! During the loading of the **WAW** accumulator in the **WAW MODE=SPECIAL** mode the preset temperature gets automatically raised up to the **<43>** Loading temp. of **WAW** special parameter value that is indicated by the **"+"** plus sign

If the manual mode is set **(FIREPLACE MODE=MAN) (the green LED diode (1) ! blinks.)** you can manually control the choke valve- the **"+"** button **(4)** causes the opening of the choke valve (one step 10%) and the **"+"** button **(5)** causes its closing.

There are the following operation modes of the fireplace:

MAN - Automatic control locked - only manual control of the choke valve is available Green status diode (1) blinks.

OFF - Setting the choke valve to the rest position (the <50> ChokeV State OFF parameter).Green status diode (1) doesn't light.

ON - The choke valve is automatically controlled to stabilize temperature of the water jacket. Green status diode (1) does light.

AUTO - Full automatic burning cycle in the fireplace (firing up - operation - burning out). Automatic operation is controlled by pressing the button **„3"** F1 . Green status diode (1) lights during the fireplace operation and goes out when the burnt--out state is detected.
At the end of the burning-out phase the choke valve sets to the rest position (0%, full shut-off), which prevents a room from cooling off and protects the water attachment against freezing.

Automatic operation is activated by pressing the **"ON/OFF"** button „3" F1
The choke valve is fully opened. In 2hrs the fireplace ought to heat itself and reach the preset temperature stabilized by choke valve movements. From that moment the temperature fall to the preset temperature by more than 10 oC (the **<23> FPLACE OFF** Temp. parameter) existing for 30mins is treated as a burnout of the fireplace. The control unit ends the operation cycle setting the choke valve to the rest position. Pressing the **"ON/OFF"** button **„3" F1** F1 once more starts another operation cycle. Green status diode (1) lights during the fireplace operation and goes out after recognizing the burnout state of the fireplace.

AUTO operation icon in waiting for the start of a new cycle (that is, before its start or after its end.

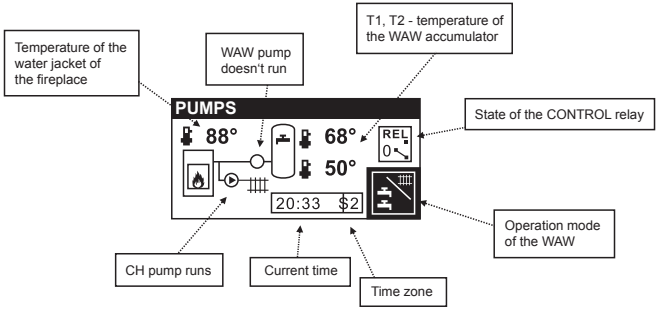
AUTO operation icon during the cycle.

En

It's a stable state, that is, in order to change it you need to press the **CHOOSE** button **„7"**.

En

Operation screen of the whole system

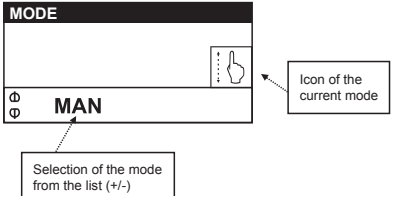


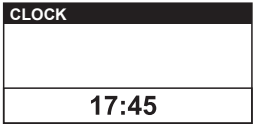
! The display shows the operation of the **WAW (P1)** and CH **(P3)** pump. The pump **(P3)** is not shown because it's switched on parallelly with the pump **P1 or P3**
It's a stable state, that is, in order to change it you need to press the **CHOOSE** button **(7)**

Screen of the operation modes enables changing the operation mode of the fireplace and **WAW** accumulator.

Possible operation modes of the fireplace are as follows (described above):
MAN/OFF/AUTO/ON

Possible operation modes of the **WAW** accumulator are as follows (described above):
OFF/SUMMER/ON/PRIORITY/CLOCK/SPECIAL





The screen shows the current time and the number of the activated time zone.

Time correction is possible after pressing the **CONFIRM** button **„6"** OK , and the minutes field begins blinking. The blinking value can be altered with the buttons **"+" „4"** + **or „5"** − . Pressing the CHOOSE button **„7"** ↻ you come to the hours field that can be set also with the buttons **"+" or "-"**. Pressing the CONFIRM button **„6"** OK , confirms the changes (the clock field will stop blinking).

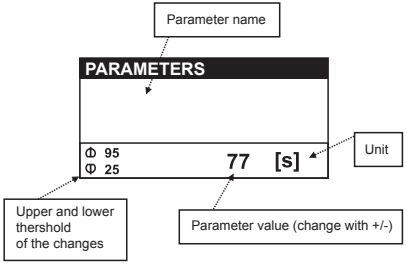
Screen of setting the parameters

Normally the parameters level equals to **"0"** namely the parameters aren't available. After changing the level to **"1", "2" , "3" or "4"** successive screens show the values of the parameters. The last screen contains **"****"** after which it comes back to the above mentioned screens.

Demonstration procedure of setting the parameters level 1:

Press:

Repeatedly the button **„7"** ↻ , till the Parameters level 0 parameter setting screen appears. Button **„6"** OK **"0"** blinks . Once the button **"4"** + **"1"** blinks. ButtonTlačítko **„6"** OK **"1"** stops blinking (the Parameters Level 1 has been chosen)



! PARAMETERS ADJUST THE CONTROL UNIT TO THE PROPERTIES OF THE FIREPLACE AND CENTRAL HEATING SYSTEM. THEIR CHANGE OUGHT TO BE CONSULTED WITH THE FIREPLACE PRODUCER. ILL-CONSIDERED MODIFICATIONS CAN CAUSE UNSTABLE AND INEFFICIENT OPERATION OF THE SYSTEM

Password

The changes of important parameters are possible only at unlocked password. To unlock the password you need to input proper sequence of digits with the buttons **"+/-"**. With the **CHOOSE** button**„7"** ↻ to change the digits position and **CONFIRM** button **„6"** OK to acknowledge all and finish the procedure of changing the password. The unlocked password is set to **"0000"**. Once again entering into the password change procedure causes a new password to be set.

! PASSWORD **„9999"** HAS CONSIDERABLE MEANING. IT CAUSES THE REACTIVATION OF THE PREVIOUS PASSWORD IF PRESENT WITHOUT IT BEING EXPOSED.

! PASSWORD OF PRODUCER'S SERVICE IS UNIQUE AND IS NOT DEPENDENT ON THE USER'S PASSWORD- IT SHOUDN'T BE EXPOSED TO THE USER. INSTEAD OF THAT THE SERVICE CAN SET THE USER HIS OWN PASSWORD.

Examples of passwords:

1. The control unit is installed with the unlocked password. The user can enter his own password e.g. **"1234".** From this moment the important parameters cannot be altered without the password being unlocked (that is, resetting the password **"1234"**). After changing essential parameters the user can leave the control unit unlocked, set any new password or enter **"9999"**, which activates the password **"1234"**
1. Producer gives the control unit with the set password. The user cannot alter the important parameters. The servic can change the settings with its own secret password. At the end a serviceman enter the secret password or **"9999"**, the user still hasn't access to the important parameters.
2. Producer gives the control unit with the set password. The user cannot alter the important parameters. The servic can change the settings with its own secret password. At the end

a serviceman leaves the control unit unlocked, the user now has access to the important parameters. He can enter his own password like in example No. 1.

1. Producer gives the control unit with the set password. The user cannot alter the important parameters. The servic can change the settings with its own secret password. At the end a serviceman sets the password e.g. **"1234"** and tells it to the user, the user has access to the important parameters but without knowing the password the other persons cannot make the changes.
2. The user has the unlocked control unit or his own password. Serviceman decides, the user though oughtn't have access to the important parameters. The serviceman locks the control unit with his secret password, which removes the user's password and locks the control unit.
1. Serviceman doesn't have to know the user's password. Always he can use his own secret password and at the end lock with the **"9999"**, which reactivates the user's password.

Demonstration change of the **<21> ALARM** Temp. parameter defining the fireplace temperature so that after exceeding it the alarm sound is generated (Parameters Level 3)

Press:

- Repeatedly the button **„7"** ↻, till the Parameters level 0 parameter setting screen appears
- Button **„6"** OK **"0"** blinks
- 3 times the button **"4"** + **"3"** blinks
- Button **„6"** OK **"3"** stops blinking (the Parameters Level 3 has been chosen).
- Button **„7"** ↻ current value of the **<21> ALARM** Temp. parameter shows up.
- Button **„6"** OK current value, you want to change, starts blinking.
- Buttons **"4"** and **"5"** + aND − you set a new value.
- Button **„6"** OK we confirm the new value.
- Repeatedly the button **„7"** ↻, till the **"***"** parameter end setting screen appears.

4. Installing the control unit

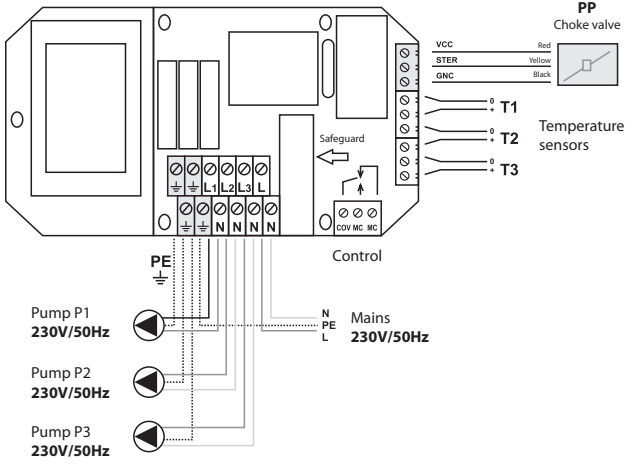
! THE REGULATOR IS SUPPLIED BY 230V/50HZ . ANY MOVES REGARDING INSTALLATION HOULD BE MADE AT THE DISCONNECTED MAINS.

! THE REGULATOR HAS TO BE CONNECTED TO THE MAINS WITH THE ZERO-PIN. ! THE REGULATOR SHOULD NOT BE EXPOSED TO WATER AFFECTING. ITS ENVIRONS OUGHT TO BE CLEAN.

! THE PRODUCER DOESN'T TAKE ANY RESPONSIBILITY FOR DAMAGES CAUSED BY WRONG USAGE OF THE REGULATOR.

Connection diagram of the elements of the control unit is presented on fig. 3

PP	Choke valve
T1	Upper temperature sensor of the WAW accumulator (option)
T2	Lower temperature sensor of the WAW accumulator
T3	Temperature sensor of the fireplace water jacket
P1	Pump loading the WAW accumulator from the fireplace
P2	Pump of the primary side of the heat exchanger (it operates if P1 or P2 is activated)
P3	CH circulating pump


PP
Choke valve
VCC
Red
STER
Yellow
GNC
Black
T1
T2
T3
Temperature sensors
Safeguard
L1 L2 L3 L
N N N N
COV MC MC
Control
PE
Pump P1
230V/50Hz
Pump P2
230V/50Hz
Pump P3
230V/50Hz
N
PE
L
Mains
230V/50Hz

PARAMETERS LEVEL 1					
No.	NAME	RANGE	DEFAULT	SETTING	FUNCTION
20	**FIREPLACE** Temperatur	45 ... 85 °C	55 °C		Preset temperature of the fireplace kept by the control unit.
31	Switch-on Temp of **PUMPS**	30 ... 60 °C	50 °C		Minimal temperature of the fireplace at which the CH pump P3 and P1 (WAW) can be activated.
41	Maximum temp. of **WAW**	30 ... 99 °C	60 °C		Maximal temperature of the WAW accumulator. The exceeding turns off the loading pump.
42	Minimum temp. of **WAW**	30 ... 99 °C	50 °C		Minimal temperature of WAW accumulator. The exceeding turns on the loading pump.
43	Loading temp. of **WAW** special	30 ... 99 °C	65 °C		Preset temperature of the fireplace automatically set at the loading of the WAW accumulator in the priority mode **WAW MODE = SPECIAL**
44	Delta Temp. of **WAW**	1 ... 10 °C	2 °C		Minimal difference between fireplace and WAW accmulator temperature needed for the WAW pump operation **P1**
10	Signal	**OFF/ ON/ ON+ALARM**	**ON + ALARM**		**OFF** turns off sound signal **ON** turns on sound signal **ON+ALARM** turns on sound and alarm
11	Language	Polish/ English/ Deutsch	Polish		Selection of the language version
13	**LCD** backlight	**OFF/ON**	**OFF**		**OFF** - backlight is active for 2mins from the last pressing of the button **ON** - backlight is active when the control unit is switched on.

PARAMETERS LEVEL 2					
No.	NAME	RANGE	DEFAULT	SETTING	FUNCTION
14	Time zones	**OFF/ON**	**OFF**		**OFF** - times zones function disabled **ON** - times zones enabled acc. to the settings below, that is, **<70>**...**<79>** and **<22>**
70	Zone 1 from	0:00 .. 23:45	6:00		Start of the 1st time zone
71	Zone 1 to	0:00 .. 23:45	8:00		End of the 1st time zone
72	Zone 2 from	0:00 .. 23:45	14:00		Start of the 2nd time zone
73	Zone 2 to	0:00 .. 23:45	17:30		End of the 2nd time zone
74	Zone 3 from	0:00 .. 23:45	20:00		Start of the 3rd time zone
75	Zone 3 to	0:00 .. 23:45	22:30		End of the 3rd time zone
76	**ECO** 4 from	0:00 .. 23:45	23:00		Start of the 4th tome zone - economic
77	**ECO** 4 to	0:00 .. 23:45	5:00		End of the 4th tome zone - economic
78	**ECO** 5 from	0:00 .. 23:45	8:00		Start of the 5th time zone - economic
79	**ECO** 5 to	0:00 .. 23:45	13:30		End of the 5th time zone - economic
22	**ECO** Temp.	-1 .. -9 °C	-5 °C		The lowering of the fireplace temperature in relation to the preset temperature during the economic timezone **„e4“** or **„e5”**

PARAMETERS LEVEL 3 - PARAMETERS CAN BE CHANGED AT THE UNLOCKED PASSWORD					
No.	NAME	RANGE	DEFAULT	SETTING	FUNCTION
50	Choke V State **OFF**	0 ... 100 %	0 %		Position of the choke valve in the power supply state turned off (0%-full shut-off, 100% - full opennig)
32	Stoptime of **CH PUMP**	1 ... 30 mins	4 mins		Break time of the **CH** pump in the cyclical mode. After the time pump turns on for 45secs.
33	Hysteresis of **PUMPS**	1 ... 10 °C	1 °C		Temperature hysteresis of turning on/off the pumps. The temperature difference between turing on and turning off the pumps. It prevents from often switchovers, especially if there's another heat source in the heating system.
45	Rundown Time of **WAW PUMP**	1 ... 10 mins	1 min		Rundown time of the **WAW** pump. The extending of the time for the pump operation after finishing loading the **WAW** accumulator. It prevents a sudden temperature increase in the fireplace water jacket after ending the loading, especially in summer time when the Ch pump doesn't run ...
46	Loading mode of **WAW**	1 ... 2	1		Kind of loading for the **WAW** accumulator 1. Temperature sensor **T2** (down) controls the loading of **WAW** 2. Temperature sensors **T1** (up) and **T2** (down) control the loading of the **WAW** accumulator
21	**ALARM** Temp.	75 ... 95 °C	85 °C		Fireplace temperature at which the alarm turns on.
23	**FIREPLACE OFF** Temp.	5 ... 25 °C	10 °C		Decreasing fireplace temperature in relation to preset temperature at whose exceeding the countdown of 30mins begins up to the switch-off of fireplace (stop condition at **FIREPLACE MODE = AUTO**

12	**CONTROL** Relay	2 ... 6	2		Switch-on of the **CONTROL** relay if 2. fireplace temperature is highter than Switch-on Temp. of **PUMPS** 3. **WAW** temperature measured by **T2** sensor is higher than **„tha<42>** Minimum temp. of WAW parameter 4. **WAW** temperature measured by **T1** sensor is higher than the **<42>** Minimum temp. of WAW parameter 5. **WAW** temperature meased by **T2** sensor is higher than the **<41>** Maximum temp. of **WAW** parameter 6. fireplace temperature is higher than the **<21> ALARM** Temp.
51	**Choke V** Mode	1 ... 2	1		Control type of the choke valve 1. Continuous control - servomotor of the choke valve is always active. 2. Dynamic control - servomotor of the choke valve is active only if the position change of the valve is needed.

PARAMETERS LEVEL 4					
No.	NAME	RANGE	DEFAULT	SETTING	FUNCTION
90	Product No.	0 ... n	1		Number of the parameters set - dependent on fireplace producer
91	**RESET**	**OFF/ON**	**OFF**		Setting the value of **„ON“** causes the recall of all parameters to their default pre-sets and restarts the control unit.
92	P**ASSWORD**	0 ... 9999	0000		**„0000“ PASSWORD OFF** **„----“ PASSWORD ON**
99	Service Screen	**OFF/ON**	**OFF**		The **ON** value causes diagnostics screen to be added for servicing.

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